



# FLORIDA KEYS

National Weather Service  
Forecast Office  
[www.weather.gov/keywest](http://www.weather.gov/keywest)



## September 2016 CLIMATE SUMMARY

TEMPERATURES SLIGHTLY ABOVE NORMAL  
WETTER THAN NORMAL - LOWER KEYS  
MUCH DRIER THAN NORMAL - MIDDLE/UPPER KEYS

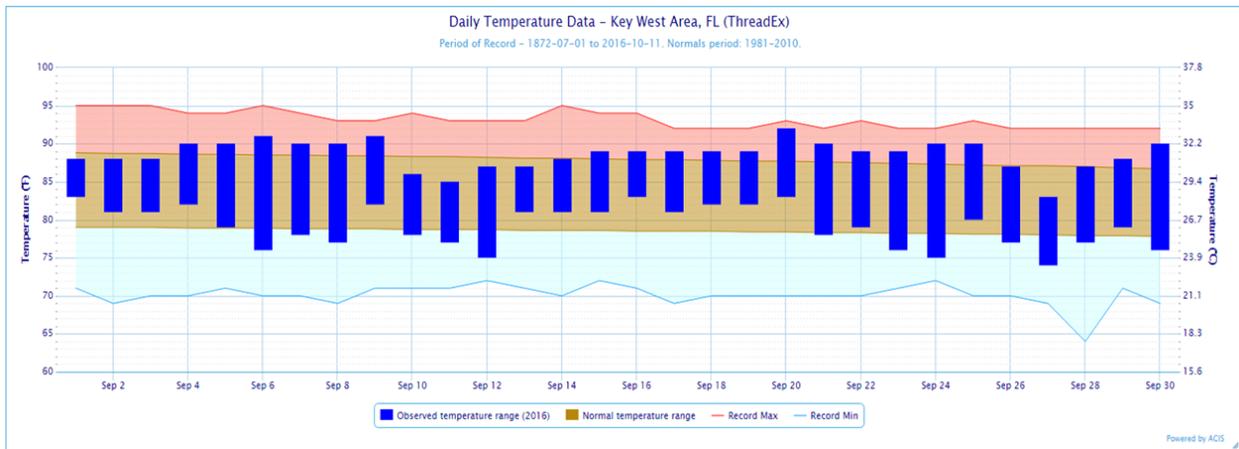


Figure 1: Daily observed temperatures at the Key West International Airport during September 2016. The blue lines are the observed high/low temperatures, the red/light blue shaded areas represent the high/low temperature records, and the brown shaded area in the middle is the normal high/low temperature range. The “Normal Period” referred to in this summary is the 30-year period between 1981 and 2010.

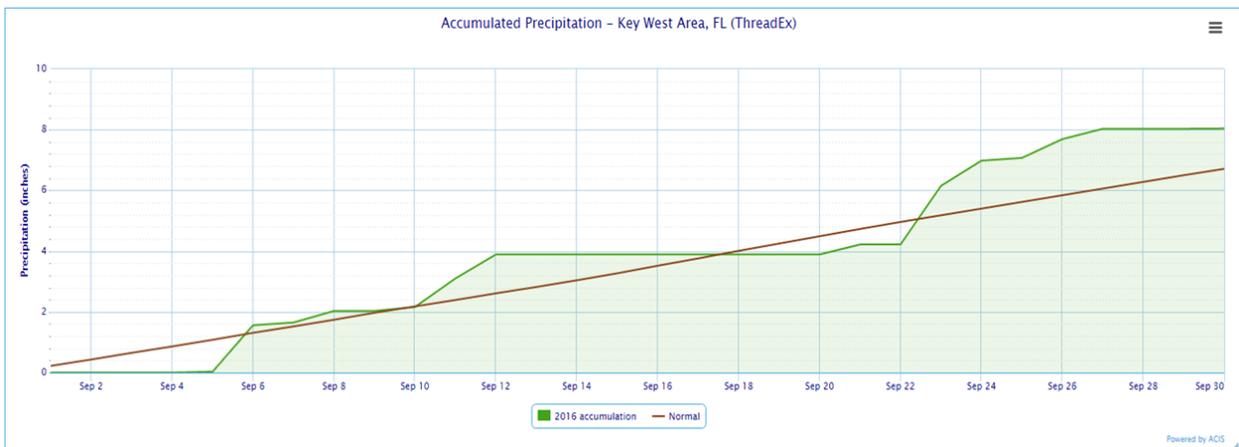


Figure 2: Daily accumulated precipitation at the Key West International Airport during September 2016. The brown line is the normal accumulated precipitation for the month, while the light green line/area represents the September 2016 accumulated rainfall.

## WEATHER SYNOPSIS

September in the Florida Keys represents the peak of the rainy season, averaging 6.71 inches of rainfall in Key West, or 1.33 inches more than August, historically the 2<sup>nd</sup> wettest month of the year. This designation certainly held true for the Lower Keys, where rainfall at the Key West International Airport measured 8.04 inches, or 1.33 inches above normal. Many locations from Cudjoe Key to Key West observed in excess of 8 inches to nearly 10 inches of rainfall (See Table 3). Just 50 miles to the east of Key West, at the Marathon Florida Keys Airport, only 3.78 inches of rain was observed, which was 3.95 inches below normal. The drier than normal conditions extended to the Upper Keys where the majority of locations averaged 3 to 6 inches of rainfall for the month.

One of the main contributing factors for the wetter than normal conditions across the Lower Keys were the persistent cloud line formations over the islands. Cloud lines will develop and persist over the Lower Keys when winds are light and trend east-northeasterly. Two prominent 6-day periods occurred during September (6<sup>th</sup>-12<sup>th</sup> & 21<sup>st</sup>-27<sup>th</sup>) where cloud lines were able to form and regenerate throughout the day, resulting in rainfall across the Lower Keys.

Figure 3 illustrates a typical wind rose for the Key West International Airport during the month of September, averaging the years of 1996 to 2016. The average wind direction during September is out of the east southeast, with an average wind speed of 8.4 mph.

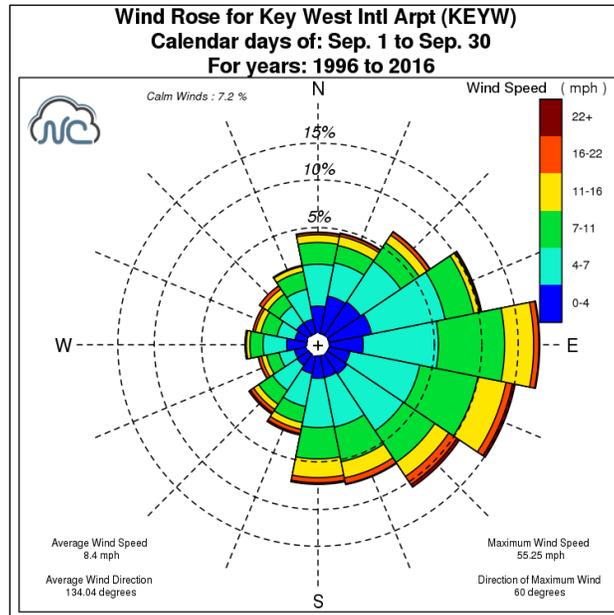


Figure 3: Wind rose for the month of September (1996-2016)

Figure 4 highlights the two 6-day periods where above average rainfall was observed across the Lower Keys. In each instance, winds tended to be lighter than normal and favored an east-northeasterly direction. The time period of September 21<sup>st</sup>-27<sup>th</sup> is more telling with the lower

average wind speed of 4.57 mph and the more pronounced east-northeasterly and easterly wind directions when compared to the typical September wind rose.

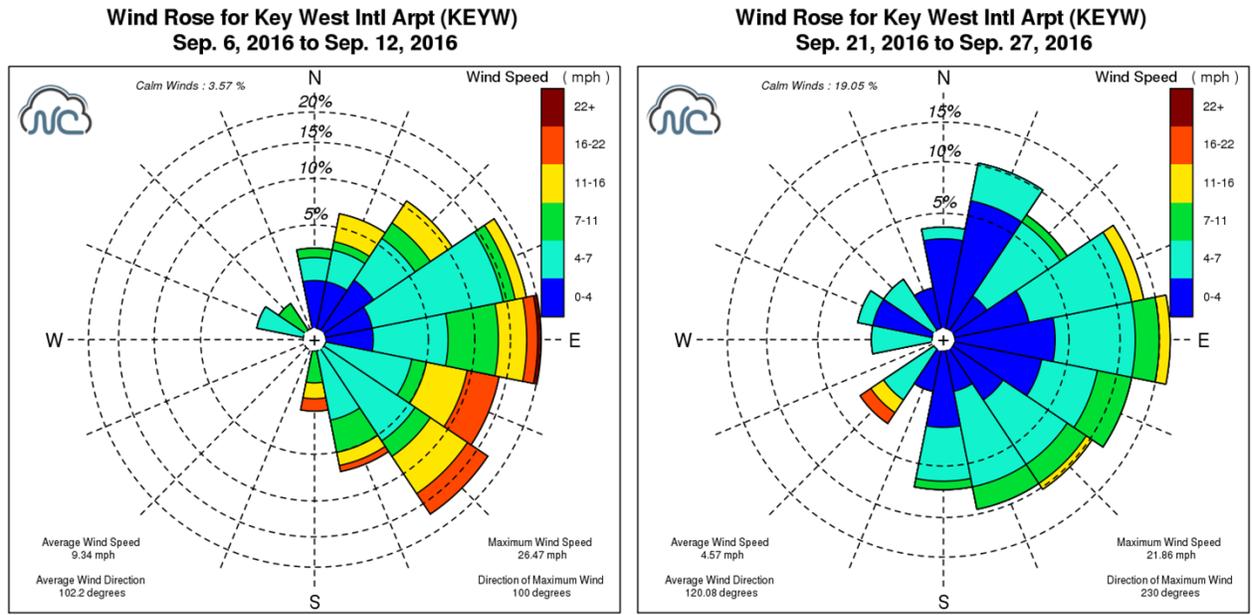


Figure 4: Wind roses for September 6<sup>th</sup>-12<sup>th</sup> & 21<sup>st</sup>-27<sup>th</sup> showing favorable wind speed & direction resulting in persistent cloud line formations over the Lower Keys

September temperatures were slightly above normal across the Florida Keys. Sea level pressure anomalies (Figure 5) for the month showed a strong positive anomaly over the Keys, which aided in the above normal temperatures observed. Some of the warmest locations for the month were found along the Middle and Upper Keys where less rainfall was observed.

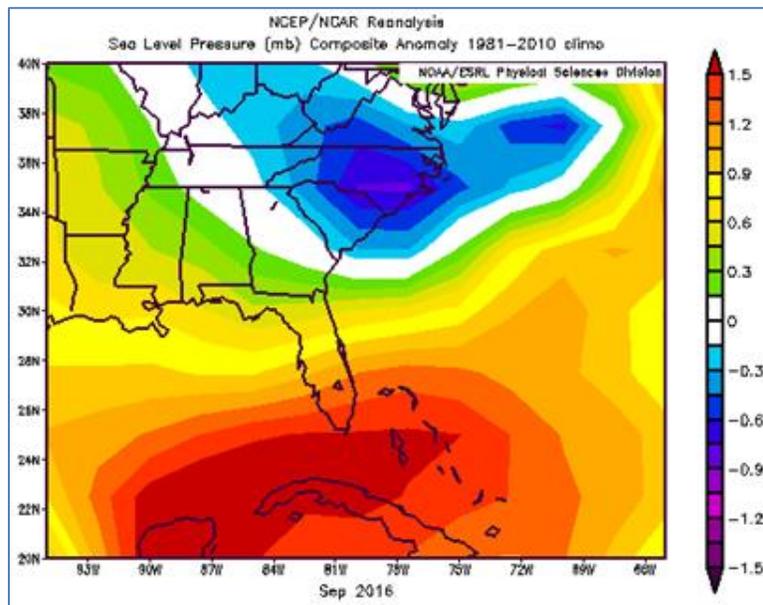


Figure 5: Sea Level Pressure anomalies for September 2016 based on a 1981-2010 climatology

## TEMPERATURES ACROSS THE KEYS

Taking a look at the average/normal monthly temperatures, departures from normal, and the highest/lowest values of the month, as shown in Table 1. A majority of the island chain experienced slightly warmer than normal temperatures during September. Island communities along the Middle and Upper Keys experienced the largest departures from normal, which is partly due to the reduced amount of rainfall observed over those areas, thus ultimately less cloud cover to help keep temperatures at bay.

With an average temperature of 83.9 degrees, September 2016 tied as the 21<sup>st</sup> warmest on record in Key West. This was 3<sup>rd</sup> consecutive year that September temperatures registered above normal, and the 6<sup>th</sup> month of 2016 to do so. The warm average temperatures across the Florida Keys were mostly driven by the above average overnight low temperatures (Table 2). Temperature records in Key West date back to 1872.

LOCATION <small>(TYPE)</small>	AVERAGE (°F)	NORMAL (°F)	DEPT. (°F)	HIGHEST & DATE <sup>◇</sup>	LOWEST & DATE <sup>◇</sup>
Marathon Florida Keys Airport <small>(ASOS)</small>	84.6	83.9	+0.7	93 – 24 <sup>TH</sup>	71 – 27 <sup>TH</sup>
Dry Tortugas <small>(COOP)</small>	84.6 <sup>*</sup>	83.5	+1.1	92 – 28 <sup>TH</sup>	76 – 27 <sup>TH</sup>
Bahia Honda State Park <small>(COOP)</small>	84.0	82.6	+1.4	91 – 25 <sup>TH</sup>	74 – 28 <sup>TH</sup>
Key West International Airport <small>(ASOS)</small>	83.9	83.2	+0.7	92 – 20 <sup>TH</sup>	74 – 27 <sup>TH</sup>
Curry Hammock State Park <small>(COOP)</small>	83.4	83.4	0.0	91 – 24 <sup>TH</sup>	72 – 29 <sup>TH</sup>
John Pennekamp State Park <small>(COOP)</small>	83.4	81.9	+1.5	90 – 24 <sup>TH</sup>	71 – 28 <sup>TH</sup>
Duck Key <small>(COOP)</small>	83.0	82.8	+0.2	91 – 22 <sup>ND</sup>	72 – 30 <sup>TH</sup>
NWS Key West <small>(COOP)</small>	82.7	83.2	-0.5	91 – 4 <sup>TH</sup>	73 – 27 <sup>TH</sup>

Table 1: Average/Normal temperatures, departures from normal, and date of highest/lowest occurrence.

<sup>◇</sup>Some dates are the last of multiple occurrences. <sup>\*</sup>Numerous Missing Days

LOCATION <small>(TYPE)</small>	AVERAGE LOW (°F)	NORMAL AVERAGE LOW (°F)	NORMAL DEPT. (°F)	HIGHEST & DATE <sup>◇</sup>
Dry Tortugas <small>(COOP)</small>	79.6 <sup>*</sup>	77.2	+2.4	82 – 2 <sup>ND</sup>
Key West International Airport <small>(ASOS)</small>	79.1	78.5	+0.6	83 – 20 <sup>TH</sup>
Bahia Honda State Park <small>(COOP)</small>	79.1	77.2	+1.9	83 – 2 <sup>ND</sup>
Marathon Florida Keys Airport <small>(ASOS)</small>	78.9	78.5	+0.4	84 – 2 <sup>ND</sup>
John Pennekamp State Park <small>(COOP)</small>	78.2	76.0	+2.2	83 – 2 <sup>ND</sup> /3 <sup>RD</sup>
Curry Hammock State Park <small>(COOP)</small>	77.7	77.4	+0.3	83 – 2 <sup>ND</sup>

Duck Key (COOP)	77.0	77.8	-0.8	80 – 22 <sup>ND</sup>
NWS Key West (COOP)	76.9	78.5 <sup>^</sup>	-1.6	83 – 1 <sup>ST</sup>

Table 2: Average/Normal low temperatures, departures from normal, and date of highest occurrence.

◊Some dates are the last of multiple occurrences. \*Numerous Missing Days

## RAINFALL TOTALS ACROSS THE KEYS

Table 3 below displays the monthly/normal rainfall totals, and departures from normal. Some of the highest rainfall totals for the month were observed across the Lower and Middle Keys. A CoCoRaHS site located in New Town Key West measured 9.82 inches of rainfall for the month, with most locations from Cudjoe Key to Key West seeing in excess of 8 inches. As mentioned in the weather synopsis, the Lower Keys on average observed the most rainfall throughout the Keys in September thanks to persistent cloud line activity.

Some locations across the Middle Keys saw nearly a 4 inch deficit, which was the case at the Florida Keys Marathon International Airport coming in a 3.95 inches below normal. The largest one day rainfall total observed was 2.91 inches, measured on September 27<sup>th</sup> by a CoCoRaHS rain gauge on Big Coppitt Key. For the year, Key West stands at 33.38 inches or exactly 3.00 inches above normal. At the Marathon Florida Keys Airport, a total of 32.97 inches of rain has fallen since January 1<sup>st</sup>, coming in at 3.58 inches below normal. With September 10<sup>th</sup> serving as the peak of hurricane season, tropical cyclone impacts in the Keys have had a major impact on rainfall records and averages. The lack of tropical cyclone activity this year helped result in the below normal rainfall observed in the Middle and Upper Florida Keys. Rainfall records in Key West date back to 1871.

LOCATION (TYPE)	RAINFALL (INCHES)	NORMAL (INCHES)	DEPARTURE (INCHES)	Greatest 24-hr Total / End Date
Key West 1.3 ENE (CoCoRaHS)	9.82			1.63" / 25 <sup>TH</sup>
Cudjoe Key 0.9 SSW (CoCoRaHS)	8.68			2.28" / 27 <sup>TH</sup>
Key West 0.5 SW (CoCoRaHS)	8.67			1.61" / 27 <sup>TH</sup>
Marathon 6.8 ENE (CoCoRaHS)	8.67			0.98" / 26 <sup>TH</sup>
Big Coppitt Key 0.2 NW (CoCoRaHS)	8.56			2.91" / 27 <sup>TH</sup>
Key West International Airport (ASOS)	8.04	6.71	+1.33	1.93" / 23 <sup>RD</sup>
Key West 1.0 SSW (CoCoRaHS)	7.89			1.97" / 27 <sup>TH</sup>
NWS Key West (COOP)	7.81	6.71 <sup>^</sup>	+1.10	1.65" / 26 <sup>TH</sup>
Key Largo 6.2 NE (CoCoRaHS)	7.66			2.33" / 28 <sup>TH</sup>
John Pennekamp State Park (COOP)	6.95	7.89	-0.94	2.42" / 28 <sup>TH</sup>

Cudjoe Key (CWOP)	6.36			1.88" / 6 <sup>TH</sup>
Duck Key (COOP)	5.65	6.69	-1.04	1.20" / 28 <sup>TH</sup>
Curry Hammock State Park (COOP)	5.37	7.58	-2.21	0.91" / 26 <sup>TH</sup>
Key Largo 0.9 SE (CoCoRaHS)	5.25			1.68" / 7 <sup>TH</sup>
Islamorada 7.8 SW (CoCoRaHS)	4.48			1.53" / 28 <sup>TH</sup>
Ramrod Key (CWOP)	4.24			1.44" / 6 <sup>TH</sup>
Marathon Florida Keys Airport (ASOS)	3.78	7.73	-3.95	1.63" / 27 <sup>TH</sup>
Key Largo 5.3 SW (CoCoRaHS)	3.74			2.18" / 27 <sup>TH</sup>
Dry Tortugas (COOP)	2.95*	6.63	-3.68	1.12" / 14 <sup>TH</sup>
Bahia Honda State Park (COOP)	2.74	6.57	-3.83	0.95" / 28 <sup>TH</sup>

Table 3: Total/normal rainfall, and departure from normal. \*Missing Days ^Key West International Airport Normal

### Daily Records Set or Tied During September 2016 at Key West

A total of just one daily record was tied at the Key West International Airport in September. The Warm Minimum Temperature record was tied (Table 3) on the 16<sup>th</sup> of September, with an overnight low temperature of 83 degrees. This daily warm minimum temperature record was last recorded in 1996. No precipitation records were set or tied during September 2016.

Record Type (Set or Tied)	Date Set in 2016	Record Value	Previous Record	Previous Record Year
Warm Minimum Temperature (Tied)	September 16 <sup>th</sup>	83	83	1996

Table 4: Warm minimum temperature records, date of occurrence, and previous record.

### **References**

[National Centers for Environmental Information \(NCEI\)](#)  
[NOAA Earth Systems Research Laboratory \(ESRL\)](#)  
[Community Collaborative Rain, Hail & Snow Network \(CoCoRaHS\)](#)  
[State Climate Office of North Carolina](#)

*Additional Resources can be found on the [NWS Key West Climate Page](#)*

### **Contact Information**

*For any questions or for more information, please contact:*

**Brandon Fling - Meteorologist/Climate Program Focal Point**

**David Ross – Meteorologist/Observation Program Lead**

**Krizia Negron – Meteorologist/Forecaster**